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EXAMINER	
TAKELE, MESEKER	
ART UNIT	**PAPER NUMBER**
2109	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/799,030	THOMAS ET AL.	
	Examiner	Art Unit	
	Meseker Takele	2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/21/2004, 11/4/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 objected to because of the following informalities: "real scene" in line 3 should be "said real scene". Appropriate correction is required.

2. Claim 1 objected to because of the following informalities: "desired viewpoint" in line 7 should be "said desired viewpoint". Appropriate correction is required.

3. Claim 1 objected to because of the following informalities: "selected object" in line 11 should be "said selected object". Appropriate correction is required.

4. Claim 2 objected to because of the following informalities: "real image" in line 2 should be "a real image". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1-10, 12-30,32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Moezzi (U.S. Patent Number 5,850,352).

As to claim 1, Moezzi discloses, a method for generating a desired view of a real scene from a selected desired viewpoint, (example, selection of desired view, real world scene, see column 20, lines 30-34, column 9, line 51 and figure 1a-1c) said method comprising: obtaining at least one real scene image from one or more cameras (example, real-world event, multiple video camera, see column, 39, lines 43-44) said

one or more cameras each having a respective real viewpoint (see figure 10) identifying selected objects (example, selected object, column 1, line 39), (example, detect objects or identify event, see column 26, lines 15-16, figure 2) in said at least one real scene image determining estimates of the positions of the selected objects (example, positions, see column 26, line 20, figure 2) selecting a desired viewpoint (see column 34, lines 49-52, column 20, line 32) based on the relationship (example, relationship, column 38, line22) of the selected desired viewpoint to the or each real viewpoint, and the estimates of the positions of the selected objects, determining positions of the selected objects in said desired view of the scene and rendering (see figure 2) a view of the scene from the selected desired viewpoint (see column 20, lines 3-4) wherein at least some selected objects are rendered using image data (example, image data, see column 5, line 66) from at least one real scene source image (column 1, line 42).

As to claim 2, Moezzi discloses, wherein at least a portion of said rendered view is generated without transformation of real images (example virtual images, see column 1, lines 34)

As to claim 3, Moezzi discloses, wherein at least a portion of said rendered view is generated using image data from a real scene image (example, real video images see column 1, lines 34) which is not contemporaneous with the image data from which said at least some selected objects are rendered (see figure 2).

As to claim 4, Moezzi discloses, wherein selected objects are rendered in the desired view as projections (example, projection, (see column 38, lines 19-24) of real images of those objects obtained from at least one real scene image (see figure 2).

As to claim 5, Moezzi discloses, wherein said real images of selected objects are transformed (example, transformation, column 5, line 65-66 optionally rotated (example, sphere, see column 16, lines 19).

As to claim 6, Moezzi discloses, wherein selected objects are rendered in the desired view as projections of real images of those objects oriented perpendicular to the real camera optical axis (see figure 2).

As to claim 7 Moezzi discloses, wherein selected objects are rendered in the desired view as projections of real images of those objects oriented perpendicular to the selected viewpoint optical axis (see figure 2).

As to claim 8, Moezzi discloses, wherein selected objects are rendered in the desired view as projections of real images, which have been mapped onto 3D surfaces (example, mapped into 3-D, see column 43, lines 45-53, figure 4, figure 9b and 9c).

As to claim 9, Moezzi discloses, wherein said 3D surfaces are generated in response to the outline of the real images of said selected objects obtained from at least one real scene image (example, outline, selection criteria, see column 32, lines 54-55, figure 7).

As to claim 10, Moezzi discloses, wherein real images of selected objects are obtained from said at least one real scene image by a keying process (example, keying, see column 3, lines 55-60).

As to claim 12, Moezzi discloses, wherein images of selected objects obtained from said at least one real scene image is interpolated (see figure 2).

As to claim 13, Moezzi discloses, wherein a set of real scene images are obtained from a plurality of cameras having mutually different viewpoints (example, multiple video cameras, different location, See abstract, column, 15, line 40, column 9, lines 10-18 and figure 5).

As to claim 14, Moezzi discloses, wherein each selected object in the desired view is rendered as a projection of a real image of that object extracted from the one of said set of real scene images that corresponds to the real viewpoint closest to the desired viewpoint (example, extract, received desired view, column 20, lines 36-38).

As to claim 15, Moezzi discloses, wherein each selected object in the desired view is rendered using image data from two or more of said set of real scene images (example image data, see column 5, line 66, figure 2).

As to claim 16, Moezzi discloses, wherein projections of real images are projections of real images mapped onto 3D surfaces (example, 3D, texture projection, see figure 2, column 43, line 49).

As to claim 17, Moezzi discloses, wherein said 3D surfaces are generated from the intersections of generalized cones (example, generalization, all points, see column 31, line58, column 32, line 17, figure 9a) of the outline of a selected object viewed from different viewpoints (see figure 11) which generalized cones are the union of visual rays from all silhouette points of a selected object (example, silhouettes, see column 37, line 22, column 28, line 47, figure 4, figure 2).

As to claim 18, Moezzi discloses, wherein one or more of said real cameras are slave cameras, which are automatically controlled based on camera parameters of others of said real cameras (example master slave, see column, 38, lines 28-48, figure 17.

As to claim 19, Moezzi discloses, wherein said different viewpoints comprises at least one elevated viewpoint and at least one low-level viewpoint (example, different level, see column 26, lines 63-67, column 27, lines 5-8, and figure 4)

As to claim 20, Moezzi discloses, wherein images from said elevated viewpoints are used to determine the position of selected objects (example, position estimation, see figure 2) in a scene and/or images from said low-level viewpoints are used to render selected objects in the desired view (see figure 1a).

As to claim 21, Moezzi discloses, further comprising tracking selected objects in one or more sequences of real scene images (example tracking, see column 32, line58, figure 5 and figure 3).

As to claim 22, Moezzi discloses, wherein said object tracking comprises obtaining a silhouette of selected objects from a real scene image by keying (example, keyed, tracked, silhouette, see column 3, line 57-59, figure 2) and analyzing changes in shape or position of the silhouette in successive real scene images (example changes, analyzed, track object, positions see column 25, line 42-45, column 26, line 15, 20, column 27, line 67).

As to claim 23, Moezzi discloses, providing a user interface to allow an operator to view one or more real scene images (example user interface, see column 26, line 32, 37-38) and to modify an automatic object tracking process (example, automatically tracked, see column 3, line 57).

As to claim 24, Moezzi discloses, wherein said user interface additionally allows an operator to modify the keying of a selected object in one or more real scene images (example, keying, see column 3, lines 55-60).

As to claim 25, Moezzi disclose, apparatus for generating a desired view of a real scene from a selected desired viewpoint. (example, selection of desired view point, column 20, line 30-34, figure 8b) means for obtaining at least one real scene image from one or more cameras (example, viewer interface means, see column20, line30-34) the or each camera having a respective real viewpoint (figure 2) means for identifying selected objects in said at least one real scene image (example, identifying object, see column 26, lines 15-16, figure2) means for determining estimates of the positions of the

selected objects (example position estimation, figure 2); means for selecting a desired viewpoint (example, object selection, see figure 2) and based on the relationship of the selected desired viewpoint to the or each real viewpoint, means for determining positions of the selected objects in said desired view of the scene and rendering a view of the scene from the selected desired viewpoint wherein at least some selected objects are rendered using image data from at least one real scene source image(example, model rendering, data, see figure2).

As to claim 26, Moezzi disclose, a method of monitoring a scene for virtual image generation (see figure 2, column 23, line 67) said method comprising: obtaining a set of real scene images from a plurality of cameras having mutually different viewpoints (figure 1a-1c) using image data from at least a first of said real scene images to derive the position of a selected object in the scene (example, object and position selection, first scan time video data, see figure 2, column 18, line 12) and using image data from at least a second of said real scene images to render a virtual image of said selected object (example model rendering, virtual camera image, second scan time video data, see figure 2, column 18, line 13).

As to claim 27, Moezzi disclose, wherein a first subset of real scene images are used to derive position (see column 5, line60, column 26, lines 12-20) and a second subset of real scene images are used for rendering (column 40, lines 20-21).

As to claim 28, Moezzi disclose, wherein at least one of said real cameras provides an elevated viewpoint, and at least one of said real cameras provides a low-level viewpoint and wherein said first subset of images includes images from at least one camera having an elevated viewpoint of the scene, and said second subset includes image from at least one camera having a low-level viewpoint of the scene (see figure 1a, figure 10a-10h, example low level, high level see column 25, 35-37).

As to claim 29, Moezzi disclose, wherein each real camera is located at a different lateral orientation around a scene (see figure 1c).

As to claim 30, Moezzi disclose, a method of controlling a slave camera based on the parameters of at least one other camera, said method comprising (example, slave see column 38, lines, 35-38) adjusting the parameters of said slave camera to point and focus at a desired point based on the camera parameters of at least one of said other cameras (column 39, lines 1-13).

As to claim 32, Moezzi disclose, apparatus for tracking selected objects in a scene comprising (example tracking, see figure 5, column 32, line 55) one or more cameras arranged to obtain one or more real scene images (see figure 5) image processing means for identifying said selected objects in said one or more real scene images (example, video data analyzer means, see column 20, lines 23-25) means for providing an estimate of the position of said one or more selected objects based on their position in the one or more real scene images (see column 26,line 20) a user interface

adapted to allow an operator to view said estimate of the position of selected objects in a real scene image said user interface including input means to allow an operator to modify said estimate (example user/viewer interface, see column 20, lines 30-34).

As to claim 33, Moezzi disclose, wherein real scene images are obtained from a plurality of cameras having different viewpoints (see figure 10a-10h).

As to claim 34, Moezzi disclose, wherein more than one real scene images from different viewpoints are displayed simultaneously (example, display see column 15, line 31,figure 10a-10h) and wherein said estimate is indicated graphically on more than one real scene image (see figure 9a-9c).

As to claim 35, Moezzi disclose, arranged to allow an operator to select those cameras from which real scene images (example, selection of real camera or image, see column 1 line, 41) are used to provide said estimate of location (example different location see column 33, line 48).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 31, 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moezzi et al. (US Patent No. 5,850,352) as applied to claim 30 and 32 above, in view of Sharir et al. (US Patent. No. 6,380,933).

As to claim 31, Moezzi does disclose, pan, tilt, zoom and focus parameters (see column 32, lines 9-15). However, Moezzi does not specifically disclose wherein all of pan, tilt, zooms and focus parameters are controlled automatically. Sharir from the same field of endeavor discloses, the pan, tilt, zoom and focus parameters are

controlled automatically (see column 2, line 56-58). It would have been obvious to one of ordinary skilled in the art to have modified tilt, zoom, and focus parameters as presented by Moezzi with automatic control as presented by Sharir. The motivation to combine these two references involves automatic measurement of the camera field of view (see column 2, lines, 56-58).

As to claim 36, Sharir disclose, arranged to allow an operator to indicate the position of one or more selected objects in one or more real scene images (see column 2, line 6).

As to claim 37, Sharir disclose, arranged to allow an operator to indicate the position of one or more selected objects in a first real scene image, and to display an estimate of the corresponding position of said one or more objects in at least a second real scene image (see column 1, line 59).

As to claim 38, Sharir disclose, including means for estimating the trajectory of a selected object based on an indicated position of the object at a first instant, an indicated position of the object at a second instant, the time elapsed between said two instants, and physical assumptions of the object's trajectory (see column 2, line 3 and figure 6a-6d).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moezzi et al. (US Patent No. 5,850,352) as applied to claim 10 above, and further in view of MacInnis et al. (US Patent number 6,570, 579).

As to claim 11, Moezzi disclose, keying process. However Moezzi does not specifically disclose chroma keying process or a difference keying process. McInnis from the same field of endeavor disclose said keying process is a chroma keying process (example, chroma keying, column8, lines 62). It would have been obvious to one of ordinary skilled in the art to modify keying process presented by Moezzi with the feature of chroma keying process as showmen by McInnis. The motivation to combine the two references determines whether each pixel is opaque or transparent based on the color of the pixel (see MacInnis, column 15, lines 40-45).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The US Patent Number: 4, 956,706 by Akio Ohba, is cited to teach apparatus for processing image.

The US Patent Number: 6,990,681 by Wang et al., is cited to teach enhancing broadcast of an event with synthetic scene using depth.

The US Patent Number: 7,042,493 by Prandoni et al., is cited to teach Automated video sequences.

The US Patent Number: 7,106,361, by Kanade et al., is cited to teach system and method for manipulating the point of interest in sequence of images.

The US Pub No: 2003/0043270 by Rafey et al., is cited to teach extracting a depth map from known camera and model tracking data.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meseker Takele whose telephone number is (571) 270-1653. The examiner can normally be reached on Monday - Friday 7:30AM- 5:00PM est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wo can be reached on (571) 272-2100. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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02/01/2007

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